

**MATHEMATICS**  
**Seventh Grade**

**NUMBER AND OPERATIONS**

*The student will identify, represent, order, and compare numbers; and estimate, compute, and solve problems.*

Key	Reporting Category		PLT Activity
<b>M</b>		Identify the place value of a given digit.	
<b>I</b>		Develop meaning for perfect squares (e.g., 1, 4, 9, and 16).	
<b>I</b>		Develop meaning for square roots.	
<b>I</b>		Use exponential notation for powers of whole numbers.	
<b>I</b>		Use a variety of models to demonstrate the relationships within the real number system (e.g., Venn diagrams, webs).	
<b>A</b>	<b>N</b>	Represent numbers using a variety of equivalent forms (i.e., mixed numbers, fractions, decimals, percents, and integers).	
<b>A</b>	<b>N</b>	Compare rational numbers using the appropriate symbol (<, >, and =).	
<b>A</b>	<b>N</b>	Connect rational numbers to locations on a number line.	
<b>A</b>	<b>N</b>	Connect percents greater than 100 and percents less than one to real-world situations.	
<b>A</b>	<b>N</b>	Use ratios to represent quantitative relationships.	
<b>D</b>		Understand and use ratios and proportions to represent quantitative relationships.	
<b>A</b>	<b>N</b>	Identify the opposite and the reciprocal of a rational number.	
<b>D</b>		Use concrete, pictorial, and symbolic representations for integers, including locations on a number line.	
<b>D</b>		Apply number theory concepts to solve problems (e.g., divisibility, factors, multiples, composite numbers, prime numbers, prime factorization, and relatively prime).	
<b>A</b>	<b>N</b>	Identify prime and composite numbers up to 50.	
<b>A</b>	<b>N</b>	Compute efficiently and accurately with whole numbers, fractions, and decimals.	
<b>D</b>		Understand the meaning and effects of arithmetic operations with fractions and decimals.	
<b>D</b>		Use models to demonstrate meaning and effects of arithmetic operations with integers.	
<b>M</b>		Apply the associative and commutative properties of addition and multiplication to simplify computations with integers, fractions, and decimals.	
<b>A</b>	<b>N</b>	Apply order of operations when computing with whole numbers (no more than two parentheses and no exponents).	
<b>D</b>		Apply order of operations when computing with decimals and fractions.	
<b>M</b>		Understand and use the inverse relationships of addition and subtraction and multiplication and division to simplify computations and solve problems.	
<b>D</b>		Select and use appropriate methods and tools for computing with whole numbers, fractions, decimals, percents, and integers in problem solving situations (e.g., mental computation, estimation, calculators, number	

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		line, computers, and paper and pencil).	
<b>D</b>		Analyze procedures for computing with fractions, decimals, and integers.	
<b>D</b>		Estimate the results of rational number computations in real-world situations.	
<b>A</b>	<b>N</b>	Use estimation strategies to select a reasonable solution to a computation involving rational numbers.	
<b>D</b>		Determine if the results of rational number estimates and computations are reasonable.	
<b>A</b>	<b>N</b>	Select a reasonable solution to a real-world division problem in which the remainder must be considered.	
<b>A</b>	<b>R</b>	Solve one- and two-step real-world problems involving whole numbers, fractions, and decimals.	50 400 Acre Wood p.217
<b>D</b>		Solve two-step real-world problems involving percents.	
<b>D</b>		Develop methods for solving problems involving proportions (e.g., scaling, and finding equivalent ratios).	

## ALGEBRA

*The student will analyze and use symbols to generalize patterns, use properties of operations, and analyze change in various situations.*

<b>D</b>		Represent, analyze, and extend geometric and numerical patterns.	
<b>A</b>	<b>AT</b>	Extend geometric and numerical patterns.	
<b>I</b>		Develop understanding for arithmetic sequences.	
<b>A</b>	<b>AT</b>	Generalize patterns in data represented in tables and graphs.	
<b>A</b>	<b>R</b>	Extend rate charts to solve real-world problems.	
<b>A</b>	<b>AT</b>	Apply function rules.	
<b>D</b>		Create function rules.	
<b>D</b>		Demonstrate understanding of different uses of variables.	
<b>A</b>	<b>AT</b>	Represent mathematical statements and real-world situations using symbols.	
<b>I</b>		Translate one-variable verbal and written expressions into algebraic expressions.	
<b>A</b>	<b>AT</b>	Evaluate algebraic expressions given the value of two or more variables.	
<b>A</b>	<b>AT</b>	Solve one-step linear equations.	
<b>A</b>	<b>AT</b>	Identify whole numbers that satisfy a given one-variable inequality.	
<b>D</b>		Model algebraic equations with manipulatives, technology, and paper and pencil.	
<b>A</b>	<b>R</b>	Solve real-world problems involving one-step linear equations.	
<b>I</b>		Explore relationships between symbolic expressions and graphs of lines.	
<b>A</b>	<b>GR</b>	Select a scatterplot to represent data presented in tabular form.	
<b>D</b>		Create a scatterplot to represent data presented in a tabular form.	
<b>D</b>		Describe the relationship between two quantities represented in a scatterplot.	
<b>D</b>		Describe how changes in one quantity or variable result in changes in	29 Rain Reasons p. 123 35 Loving It Too Much p. 147

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		another.	41 How Plants Grow p.179 44 Water Wonders p. 188 (Enrichment) 50 400Acre Wood p. 217 77 Trees in Trouble p. 332
<b>A</b>	<b>GR</b>	Interpret graphs which represent rates of change.	35 Loving It Too Much p. 147
<b>D</b>		Use unit rates to solve problems (e.g., miles per hour, and words per minutes).	38 Every Drop Counts p. 163

## GEOMETRY

*The student will analyze and describe characteristics and properties of 2- and 3-dimensional shapes, locate and specify points on a grid, and use geometric concepts (e.g., symmetry and transformations) and reasoning to solve problems.*

<b>A</b>	<b>G</b>	Determine congruence of line segments, angles, and polygons.	
<b>A</b>	<b>G</b>	Classify triangles by angle, size, and length of sides.	
<b>D</b>		Compare and classify triangles by angle, size, and length of sides.	
<b>A</b>	<b>G</b>	Determine the measure of an angle of a triangle, given the measures of the other two angles.	
<b>A</b>	<b>G</b>	Classify polygons by properties.	
<b>D</b>		Compare and classify polygons by properties.	
<b>D</b>		Use appropriate mathematical language to describe similarity and congruence.	
<b>D</b>		Locate and specify points on the coordinate plane.	
<b>A</b>	<b>GR</b>	Use ordered pairs to describe given points in a coordinate system.	
<b>D</b>		Relate symmetry and congruence to reflections (flips) about a line or to other transformations.	
<b>A</b>	<b>G</b>	Identify the results of transformations of two-dimensional figures (i.e., turns/rotations, flips/reflections, slides/translations).	
<b>M</b>		Use appropriate tools and methods to draw geometric objects with specified properties, (e.g., side lengths, and angle measure).	
<b>M</b>		Identify and build a three-dimensional object from a two-dimensional representation (net) of that object and vice versa.	
<b>A</b>	<b>R</b>	Apply spatial reasoning and visualization to solve real-world problems.	

## MEASUREMENT

*The student will determine time, length, perimeter, area, weight, capacity, and temperature and solve real-world problems involving measurement.*

<b>M</b>		Understand both metric and customary systems of measurement.	
<b>A</b>	<b>ME</b>	Convert from one unit to another within the same system.	
<b>A</b>	<b>ME</b>	Select units of appropriate size and type to measure angles, perimeter, area, surface area, and volume.	
<b>D</b>		Understand, select, and use units of appropriate size and type to measure angles, perimeter, areas, surface area, and volume.	37 Reduce, Reuse, Recycle p. 159 38 Every Drop Counts p. 163
<b>A</b>	<b>ME</b>	Estimate length, perimeter, circumference, area, and volume using a variety of strategies.	
<b>A</b>	<b>ME</b>	Determine the distance between two points on the x- or the y-axis in Quadrant I.	
<b>D</b>		Select and apply techniques and tools to accurately measure length, perimeter, area, volume, and angles to appropriate levels of precision.	

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<b>A</b>	<b>ME</b>	Apply formulas to determine the areas of rectangles, triangles, parallelograms, trapezoids, and circles.	
<b>D</b>		Develop and use formulas to determine the circumference of circles.	
<b>A</b>	<b>ME</b>	Find or estimate area of irregular and complex shapes.	
<b>I</b>		Develop strategies to determine the surface area and volume of selected prisms and cylinders.	
<b>D</b>		Construct tables and graphs to represent rates of change.	35 Loving It Too Much p. 147
<b>A</b>	<b>R</b>	Solve problems involving scale factors using ratios and proportions.	67 How Big Is Your Tree p. 284

## DATA ANALYSIS AND PROBABILITY

*The student will collect, organize, analyze, interpret, and display data in tables and graphs and determine the probabilities of outcomes in simple experiments.*

<b>M</b>		Formulate questions, design studies, and collect real-world data.	4 Sounds Around p. 26 16 Pass the Plants, Please p. 77 21 Adopt A Tree p. 97 22 Trees as Habitats p. 102 27 Every Tree for Itself p. 117 29 Rain Reasons p. 123 37 Reduce, Reuse, Recycle p. 159 38 Every Drop Counts p. 163 41 How Plants Grow p. 179 73 Waste Watchers p. 314 77 Trees in Trouble p. 332
<b>D</b>		Construct, interpret, and use multiple-bar graphs, multiple-line graphs, and circle graphs displaying real-world data.	21 Adopt A Tree p. 97 22 Trees as Habitats p. 102 37 Reduce, Reuse, Recycle p. 159
<b>A</b>	<b>DP</b>	Interpret circle graphs displaying real-world data.	37 Reduce, Reuse, Recycle p. 159
<b>A</b>	<b>DP</b>	Interpret bar and line graphs to answer questions and solve real-world problems.	16 Pass the Plants, Please p. 77 22 Trees as Habitats p. 102 27 Every Tree for Itself p. 117 35 loving it Too Much p. 147 37 Reduce, Reuse, Recycle p. 159 41 How Plants Grow p. 179
<b>D</b>		Find, use, and interpret measures of center and spread (e.g., mean, interquartile range).	
<b>A</b>	<b>DP</b>	Determine the mean for a data set.	85 In the Driver's Seat p. 371
<b>A</b>	<b>DP</b>	Determine the median for a data set.	
<b>A</b>	<b>GR</b>	Make predictions based on data.	27 Every Tree for Itself p. 117 50 400 Acre Wood p. 217
<b>D</b>		Make conjectures and predictions based on data.	4 Sounds Around p. 26BC 27 Every Tree for Itself p. 117 29 Rain Reasons p. 123 35 Loving It Too Much p. 147 37 Reduce, Reuse, Recycle p. 159 38 Every Drop Counts p. 163 41 How Plants Grow p. 179 77 Trees in Trouble p. 332 84 The Global Climate p. 363 85 In the Driver's Seat p. 371
<b>D</b>		Recognize misleading representations of data.	
<b>A</b>	<b>DP</b>	Connect data sets and their graphical representations (i.e., bar graphs, stem-and-leaf plots, box plots, and scatterplots).	

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<b>D</b>		Discuss and understand the relationship between data sets and their graphical representations (e.g., bar graphs, line graphs, circle graphs, histograms, stem-and-leaf plots, box plots, and scatterplots).	
<b>D</b>		Make conjectures and predictions based on data.	
<b>A</b>	<b>AT</b>	Use proportional thinking to make conjectures about results of experiments and simulations.	
<b>D</b>		Make conjectures to formulate new questions for future studies.	4 Sounds Around p. 26C
<b>D</b>		Determine the probability for an outcome in an experiment.	
<b>A</b>	<b>DP</b>	Connect the symbolic representation of a probability to an experiment.	
<b>D</b>		Construct a tree diagram to determine all possible outcomes of a simple event.	
<b>A</b>	<b>DP</b>	Use a tree diagram or make an organized list to determine all possible outcomes of a simple compound event.	

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